

Nov 20th, 12:00 AM

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Linn, David, "Managing European Corn Borer" (1996). *Proceedings of the Integrated Crop Management Conference*. 16.
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MANAGING EUROPEAN CORN BORER

David Linn
Farmer

Management of European Corn Borer (ECB) requires:

- 1) understanding the insect's life cycle¹
- 2) willingness to spend time scouting fields
- 3) well-timed insecticide treatments based on the scouting results.

In Iowa, ECB normally goes through two generations per year. Both generations are destructive to corn during the insect's larval stage. Scouting for first generation ECB larvae begins when corn has reached an extended leaf height of seventeen inches. Infected plants are characterized by small shotholes in the leaves caused by larval feeding. A trained eye can spot shotholes very easily. Economic thresholds are computed after pulling whorls and counting live larvae.

Collecting larvae at the end of first generation is essential. This should always be done on strips or fields that were not treated with insecticides for first generation. The number and size of larvae found are entered into a computer program² that provides a relatively accurate prediction of when to begin scouting for second generation egg masses.

Second generation ECB scouting requires searching for egg masses on corn plants. Most egg masses are deposited on the underside of the three leaves above and below the ear. Experience has taught me that inspection of at least one hundred plants per field is necessary to obtain accurate population estimates. I can thoroughly inspect one hundred plants in about one and one-half hours. I spend two to four hours per day scouting during the first one-third (6-8 days) of the second generation egg-laying period. It is usually hot miserable work. Fortunately the rewards are great. Controlling ECB damage increases yields, crop quality and harvestability. There can be large differences in ECB populations between fields and hybrids. Careful scouting is critical.

The introduction of the *Bacillus thuringiensis* (Bt) gene into corn hybrids is going to change the way ECB is managed. I have seen Bt hybrids in the field. Control of first generation ECB larvae appears to be exceptional. I have observed second generation escapes on some hybrids.

There are many questions about transgenic technology that have yet to be answered:

- 1) Will resistance to Bt toxins develop?
 - If so, how long until this happens?
- 2) If resistance does develop, what form will it take?
 - Dominant or recessive resistance genes?
- 3) Will farmers be required to plant a certain percentage of their hybrids each year to non-Bt corn?
 - This would allow survival of some ECB to theoretically lengthen the time before resistance develops.
- 4) Will Bt hybrids yield as well as conventional hybrids?
 - I wish I knew.
 - Farmers need more unbiased information than we are now receiving.
 - Bt hybrids need to be subjected to randomized and replicated tests with conventional hybrids.

I know that ECB can be effectively controlled without transgenic corn. One of the tenets in Integrated Pest Management (IPM) is to treat with toxins only when populations and economics warrant treatment. I am concerned about treating ECB with Bt toxins when populations may not warrant treatment.

Genetic engineering has complicated farmers' decision making. To formulate good decisions we need reliable, unbiased information.

¹North Central Regional Extension Publication No. 327, European Corn Borer - Ecology and Management.

²Iowa State University Extension, European Corn Borer Phenology and Management Software AGS-6.